PLATE LIX.

The Kiwi when disturbed assumed a perfectly motionless position.

The Kiwi at bay—Snapping the beak and ready to do damage with a Kangaroo-like kick.

Notes on the Habits of the North Island Kiwi (*Apteryx mantelli*)

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My more intimate knowledge of the strange ways of the Kiwi began at Kinpaka (North Auckland), when a neighbor's dog caught a young bird in the bush adjoining the settlement. It was unfortunately very badly hurt as a result of the dog's rough treatment, but as there seemed to be a possibility of saving its life, I decided to take it home and attend to its injuries.

Already at this, our first meeting, the little fellow showed an unusually savage disposition, for, although weak and evidently in great pain, it fought like a little demon, with legs and bill. I managed, however, to pick it up and carry it home, but all my attempts to administer first aid failed. My young patient proved to be so unmanageable, and so vigorously resisted all attempts to treat its injured parts, that I had to give up the idea of doing any amateur doctoring for the time. Hoping that it would become more tractable with better acquaintance and complete rest, and that freedom from worry would help it on the road to recovery, I placed the little Kiwi in a yard fenced in with wire netting, and with a good-sized box for a house. Here it made itself quite at home, but it, nevertheless, rejected all my offers of friendship, and showed its vicious temper at every opportunity.

In these decidedly unpleasant circumstances an event happened which promised to bring about a much more satisfactory state of things. Another Kiwi appeared on the scene. It was a very old and remarkably quiet bird a dog had caught in the locality, which had been the home of the young bird. There was every reason, therefore, to expect that the newcomer would receive a most cordial welcome, but to my great surprise and disappointment this was not the case.

No sooner did it notice the new arrival in the yard than the young bird made a furious rush at it and began to strike and pick at it in a most extraordinarily vicious manner, accompanying its blows with deep growls like those of an angry dog. The old bird, curiously enough, did not show the least sign of surprise or resentment. It took, in fact, absolutely no notice of its madly excited aggressor, although some of its kicks must have been sufficiently hard to cause considerable pain, as I could judge from personal experience in a tussle with my young captive. Instead of doing so, and of teaching the youngster better manners, it calmly began to explore its new quarters, walking round and round, and carefully examining the wire netting with its bill.

The two birds never became friends, the younger persisting in its hostile attitude, the other completely ignoring the other occupant of the yard. Only once did I notice the old bird knock the smaller one head over heels with a mighty kick.

It was curious to notice that although the old bird was so unsociable where one of its own species was concerned, it very soon made friends with me. It became, indeed, so tame that it let me stroke its head or neck and back, and lift it up and carry it about in my arms without showing the least sign of fear.

The question of food-supply presented far less difficulty than I had anticipated. Earth-worms were, of course, their favourite food, but raw meat and also cooked meat, and all sorts of scraps from the table formed a considerable part of their diet.

Owing to their unwillingness to leave their dark hiding place before dusk, it was at first very difficult to observe their food habits. After a while the younger bird, although as a rule so shy and wild, ventured out into the yard in broad daylight to look for something to eat. At last, also, its companion made its appearance, but always very reluctantly as long as the light was bright, whenever I whistled or rattled the wire-netting as a signal for feeding time.

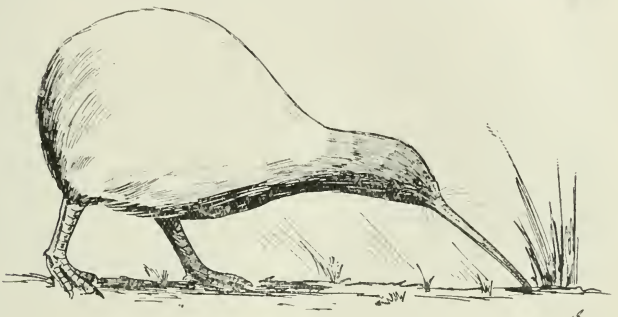
Their manner of feeding was very curious. The most noticeable feature was that they did not seem to make much use of their eyes when in search of food. They did not, indeed, notice the food when it was placed in the ground right in front of them, and even allowed the earthworms to crawl away without making any attempt to pick them up. Their sense of smell also seemed to play a very unimportant part, although the far-forward position of their nostrils and the manner in which the birds used their bills seemed to indicate that they were to a considerable extent guided by it. It could, however, often be noticed that the tips of their bills came almost within touching distance of some good-sized morsel without the birds becoming aware of it.

When hunting for their food both birds invariably began tapping the ground in all directions with the tip of their bills, as a blind man does with his walking stick to find his way. It seemed quite clear that in these operations the bill acted as a highly sensitive organ of touch, for as soon as the tip came in contact with something edible, the birds would invariably seize it. Considering the sensitiveness of their bills, it was certainly remarkable that other parts of their bodies were almost insensible to any kind of impressions. Earth-worms could often be seen crawling over or under their toes without attracting attention.

After a good deal of coaxing the old bird learned to take its food from a plate held in my hand. Even in this case, when it seemed impossible not to see what was offered, it did not pick up anything except what it found by tapping in the manner indicated. In time it could be taught to feed from the outstretched hand. Its first attempts were quite amusing. As usual it began by tapping. When by so doing it touched the skin of the hand, it immediately withdrew its head, uttering angry grunts of displeasure, and remained for some time perfectly motionless in that uncomfortable position. Quite suddenly it became, as it were, alive again, and with quite a "pleasant expression" resumed its

search by tapping. The young bird could never be tempted to take its food in this manner.

In searching for earth-worms they showed a considerable degree of ingenuity. The hunt opened with the usual tapping. When by this means the bird discovered the burrow of one of these worms it set to work at once enlarging the opening, using its bill as a workman uses his crowbar. When it had formed a funnel-like depression, it inserted its bill and took a good hold of the worm. With a steady pull it often succeeded in bringing its victim to the surface. When it was not able to do so, it ceased pulling, as continuing to do so would have resulted in tearing the worm and losing the greater part, and leaning well back remained in the same position, waiting, without the faintest movement of any part of its body, until the worm, tired out by its



A Kiwi taking a steady pull at a Worm

exertion, momentarily relaxed its hold. Then with another steady pull generally drew it out of its burrow. When this second attempt failed, it would repeat the same performance until the worm was finally dislodged.

It was only when searching for food under the thick clumps of grass or under heaps of dead leaves that the process of tapping was modified or altogether dispensed with. In this case the birds followed the more familiar habits of Ducks.

Kiwis are blessed with a remarkably healthy appetite. The quantity of food which they could dispose of at one meal was truly astonishing, yet after a short time they were ready for another feast. Once firmly held the food was conveyed to the alimentary apparatus by means of a succession of peculiar jerks, neck and bill being held almost horizontally during the process. Even very large pieces of meat were easily and quickly despatched in this manner.

As the old bird showed a great dislike for the wire netting, I

tried the experiment of tethering it with a fishing line outside the enclosure, giving it an old barrel for a house. The bird was evidently pleased with the change. It was in fact so quiet and contented that I soon let it go quite free in the vegetable garden Here it spent most of its life sleeping under some shady bushes or amongst the French beans. Towards evening it left its hiding place, and could be seen strolling about as if lost in deep thought or looking for food in likely places.

When the birds were startled by a sudden noise or in any other way they instantly assumed a perfectly motionless position, becoming in fact as rigid as stuffed specimens, however awkward and difficult the position in which they were at the moment of surprise may have been. In this state, in which they remained for a surprisingly long time, they seemed to be quite dead to most impressions from outside. Neither loud whistling or shouting, nor pushing or poking had any effect upon them. Only when violently shaken or when lifted from the ground did they begin to show life again. After a short time they walked away looking for a dark corner, where, with their heads turned to the corner and their bills touching the ground, they remained standing perfectly still for a very long time. It is in this state that the birds show in the most striking manner their perfect adaption to the nature of their immediate surroundings, for in size and shape of body, colour and texture of plumage, even colour, size and shape of legs they are so perfectly in harmony with the varied masses of living and dead vegetation, that even in daylight it is not easy to distinguish their outlines. Towards dusk they become altogether invisible.

The same remarks apply to some extent also to the position in which the birds go to rest. When they have selected a suitable dark and well-hidden place they settled down after the manner of a broody hen going back to her eggs. Having settled comfortably, they stretched out their necks, turned their heads round, and thrust their bills into their feathery coats at a place where in a former stage of their evolution their wings used to be. For some reason or other this is evidently a most important matter, for it was only after several attempts that they found a position which they considered satisfactory. Having decided on this point the birds went at once to sleep. They now appeared as fluffy, greyish balls, which were almost indistinguishable from parts of their surroundings. Amongst the moss covered stumps of trees, ferns, or boulders, clumps of native grass, etc., they would have been invisible even to a practised eye.

Kiwis are remarkably sound sleepers. No ordinary noise awakens them. When awakened, my birds would quietly march off and look for other sleeping quarters. Strange to say, they did not immediately settle down to sleep in the usual way, but took up a position similar to the one already described, standing quite

motionless, legs apart, head turned towards a dark corner and bills touching the ground.

There can be no doubt that some of the peculiar habits of Kiwis are means of protection from natural enemies.

New Zealand possessing no indigenous mammals or birds which could possibly do harm to birds the size of the Apteryx, these habits, as well as the protective colouring, must be looked upon as survivals from a long distant past, probably from the time when these islands formed a part of a vast continental mass of land. Nothing very definite is yet known on this subject, but some conclusions may perhaps be drawn from the unusual behaviour of the birds in presence of domesticated animals, the cat and the dog. Of my cat, the two birds which form the subject of this paper took no notice whatever. Of this fact the cat was soon so well aware that he often invited himself to dinner, taking for his share the best pieces of meat within easy reach of their bills, without being in the least interfered with. Neither did the birds take any notice of my dog, a full-grown Collie, while he on his part seemed greatly interested in their strange doings. When they were both in their yard he would often sit near the wire and watch them as they passed and repassed him in their usual tour round their yard. Although they often passed almost near enough to touch him, they did not show any sign of alarm. This utter absence of instinctive fear may be an indication that the natural enemies, which preyed upon the ancestors of the Kiwis, were not representatives of the order of carnivorous mammals.

An Ascent of the Blue Wren.—When near the River Mersey on the morning of 28th July, I noticed a male Wren (*Malurus cyaneus*) in full plumage sitting upon a gum stump. When I was within a few yards he suddenly rose vertically into the air to the height of 16 or 18 feet, singing the while, like a miniature Skylark. He then descended in a slanting line to a near-by fence, from which he rose in a minute or two to repeat the performance. This trait in our bird was new to me, although it is, of course, an almost everyday sight to see one singing on top of a spray of tea-tree or other scrub in early spring. Sometimes the female will suddenly mount to a similar point of vantage and sing a hurried strain. The morning when the ascent occurred was very fine, with brisk south-east breeze, and this no doubt contributed to the Wren's unusual winter display. The same day, about noon, near Latrobe I noticed another *Malurus* in brown and grey, but with a mottled appearance about the cheeks and mantle, as if the colour was just breaking through; this I took to be a young male just coming into his tints.—H. Stuart Dove, W. Devonport, Tasmania, 23/8/1922.